



GOLDEN FORENSICS

SUMMARY OF FINDINGS

September 15, 2023

PREPARED FOR: David Bona
Carlson, Calladine & Peterson LLP
353 Sacramento Street, 16th Floor
San Francisco, California 94111
dbona@ccplaw.com

INSURED: Asplundh Tree Service

DATE OF LOSS: November 15, 2021

LOSS LOCATION: 197 Louis L'Amour Lane
Clark, Wyoming

CLAIM NUMBER: NA

GOLDEN FILE: 210867

BY:
Kirk Schmitt, IAAI-CFI

Golden File: 210867

File Name: Asplundh Tree Service

Assignment

On November 19, 2021, Kirk Schmitt, IAAI-CFI of Golden Forensics was requested to conduct an origin and cause examination of a wildland fire, known as the Clark Wildfire, that originated on a rural property addressed as 197 Louis L 'Amour Lane, Clark, Wyoming. The property was used as a Christian youth retreat known as "Be There Ranch", but due to Covid 19 restrictions the retreat had been unused for several months prior to the fire and was unoccupied at the time of the incident. The scene examination took place on November 22, 2021.

The purpose of the scene investigation was to determine where the Clark Wildfire originated, the first fuels ignited, and the energy source that provided sufficient heat to sustain combustion and ignite a receptive fuel bed.

Background

On the evening of November 15, 2021, a cold front originating in Canada moved across the Northern Plains impacting Montana and Northern Wyoming with cooler temperatures and high winds. Park County Wyoming, including the community of Clark experienced high winds of 50- 60 mph sustained, with gusts exceeding 80 mph, winds were generally out of the west/southwest. Witness Pam Nelson, caretaker for the facility described the winds as "Incredible". At 10:26 PM the Clark Volunteer Fire Department was notified of a grassfire in the vicinity of 800 County Road 1AB, their initial response indicated the fire originated near 197 Louis L 'Amour Lane, the Be There Ranch, spreading to east with the high winds. The footprint of the fire was consistent with a wind driven grass/brush fire. According to the Clark VFD report, 2 homes, 3 shops, and 8 outbuildings were impacted by the fire¹. Sadley, the wife of a Clark Firefighter perished while attempting to evacuate.

Executive Summary

The specific cause of the Clark Wildfire was undetermined. Several experts^{2, 3} have opined the cause of the Clark Wildfire was incidental or casual contact between an energized 7.2 KV, single phase electrical conductor, and a branch or branches of a mature cottonwood tree due to the high wind event.

- 1.They discuss the finding of a cottonwood branch with char on one end, AKA E-1, found approximately 32.7' (Nikon Forestry Pro II Laser Range Finder, +/- .03 m @ 3280 1000m) east from the trunk of the subject cottonwood.
2. They discuss the end of a branch still attached to the west side of the subject cottonwood with char, E- 11.

¹ Missing content

² Carlson, Clark Fire Expert Report

³ Jensen Hughes Clark Fire Expert Disclosure Report by Paul Way EE, P.E.

Golden File: 210867

File Name: Asplundh Tree Service

3. They opine that the difference in diameter between the charred end of E-1 and the charred end of E-11 must be due to a missing section of the branch.

4. They opine the specific area of origin at 138' east from the trunk of the subject cottonwood was caused by ember cast from the incidental contact between a tree branch and the east phase conductor.

5. They opine the small dark spots running along the side of E-9 are due to electrical contact arc tracking.

Using the above 5 items they reach the conclusion that the Clark Wildfire was the result of a tree line contact without considering the data that does not support this conclusion.

NWCG PMS 412⁴, and NFPA 921⁵ recommends a systematic method to conduct a valid origin and cause investigation, and the systematic method both publications recommend is the Scientific Method⁶ which provides a framework for problem solving. The investigative steps within the Scientific Method are:

1. Collect Data
2. Analyze the Data
3. Develop a Hypothesis
4. *Test the Hypothesis*
5. Select Final Hypothesis

Both NWCG 412 and NFPA 921 caution the investigator to avoid Premature Assumptions⁷ which can lead to Expectation Bias⁸, "coming to a conclusion without considering all relevant data, discounting data, or failing to seek data pertinent to the investigation", and/or Confirmation Bias⁹ "Using data to prove a hypothesis rather than test it and attempt to disprove it".

Discussions

Item 1. from above. E-1 was found 32.7' from the trunk of the subject cottonwood tree. Carlson 4.4.2.6 states "A close look at the photograph shows, that if not moved, the charred end of the branch came to rest in a location that was mostly dirt, with the charred end of the branch not in contact with any of the grass or leaves nearby". At the same time, Carlson 5.3 states he was provided photos taken by Pam Nelson prior to his site investigation. In his report, listed as P Nelson Photos 0017 it shows item E-1 laying on the ground with significant dried fuel such as

⁴ National Wildfire Coordinating Group publication PMS 412, Guide to Wildfire Origin and Cause Determination

⁵ National Fire Protection Association 921, Guide for Fire and Explosion Investigations.

⁶ NWCG PMS 412, 2016, Chapter 2, pg 102. NFPA 921, 2021, 4.1-4.3.10

⁷ NWCG PMS 412 2016, Chapter 2, pg 112, NFPA 921 2021 4.3.8

⁸ NWCG PMS 412, 2016 Chapter 2 pg 113, NFPA 921, 2021 4.3.9

⁹ NWCG PMS 412 2016, Chapter 2, pg 113, NFPA 921, 2021 4.3.10

Golden File: 210867

File Name: Asplundh Tree Service

twigs, pine needles, grasses, and leaf litter, all fine fuels that appear to be cured and ready to burn under the charred end. No burned fuels were found near E-1

Carlson also states, 10.3.3.2 "One of the branches in the damaged area of E-11 is believed to be the host branch that E-1 came from. *After extensive searches in the area, including other trees in the area, no other potential source for E-1 could be found* "emphasis added.

A photo I, INV F Schmitt, took on November 22 shows numerous cottonwood branches within inches and feet of E-1, contrary to Carlson's statement. It further shows Branch E-1 had been moved between Pam Nelson's photo 0017 from November 16, 2023, which Carlson stated he reviewed, and my photo on November 22, 2021.

There was no indication that the branch was involved in the November 15, Clark Wildfire. The branch may have been there a week, a month, or months prior. It may have been charred due to youth campers using it to stir a campfire? There is no physical evidence to show it was involved with the Clark Wildfire and therefore considered but ruled out as evidence to the event.



E-1

Golden File: 210867

File Name: Asplundh Tree Service



E-1

Other Cottonwood branches

Item 2 from above: Based on charring found on E-11 still attached to the cottonwood tree, it is possible a tree line contact occurred at some point in time. According to Paul Way, EE.P.E. the charred end of E-11 measured six feet, six inches from the east phase.¹⁰ During the June 16, 2021, joint evidence collection, Jensen Hughes Engineers measured the distance the de-energized conductor could be manually pushed to the east in the direction of the tree. The maximum distance the line could be pushed to the east was four feet. Two feet, six inches short of contacting the end of E-11. Even though Paul Way attempted to connect the two items, east phase and E-11 end, to demonstrate a tree line contact, they were unable to do so by thirty inches.

¹⁰ Jensen Hughes Clark Fire Expert Disclosure Report Figure 8, pg 13 of 50

Golden File: 210867

File Name: Asplundh Tree Service



Paul Way Figure 8

As shown in Paul Way's photo, the tip of E-11 was not oriented toward the exterior of the crown where the wind could easily manipulate it, it was located on a heavy branch more closely oriented toward the trunk of the subject cottonwood.

E-9 a group of smaller branches measured four feet, seven inches from the east phase and could have contacted the east phase during the wind event. During the June 12, 2023, lab exam I attended at Micron Imaging, no loss of mass or charring was noted on E-9, precluding any ember cast from E-9.

Further, no burning, no spot fires, and no charred wood were found under the subject powerlines, or at the base of the subject cottonwood, ruling out a missing piece between E-1 and E-11.

Item 3 from above:

Carlson 10.3.1 opines E-1 the singular branch found on the ground 32.7' from the trunk of the subject cottonwood was an extension of E-11, the charred broken branch attached to the subject tree.

The charred end of E-1 was 1.092 inches per a micrometer¹¹ and had exterior bark fully surrounding the round char end. The charred end of E-11 had a jagged torn end that did not match the end of E-1. The bark on E-1 and E-11 were significantly different as shown in the photo below.

¹¹ Carlson exhibit IMG 9829

Golden File: 210867

File Name: Asplundh Tree Service



Round charred end of E-1 doesn't match torn charred end of E-11, bark does not match either. K Schmitt IMG P6120079 and P610074

Despite these obvious differences, Investigators Carlson and Way opine these are the same branch, making no effort to explain the different bark patterns, or the difference in the charred ends. This is confirmation bias. Forensic Arborist Mike Neal stated in the June 16, 2023 lab exam, E-1 and E-11 are not from the same branch and probably not from the same tree.

Item 4 from above:

Both Investigators Way and Carlson opine a flaming ember traveled from a tree line contact, 147 feet west of the specific origin causing the Clark fire. Studies and practical first-hand experience have shown ember cast can travel long distances, as much as a ¼ mile or more, starting spot fires ahead of the main body of fire. A video taken by Pam Nelson¹² the night of the fire shows a shower of ember cast impacting the ground ahead of the fire.

In the video as the ember cast rolls across the surface of the ground numerous spot fires can be seen as the embers come to rest in receptive fuel beds. Each of these spot fires will show evidence of burning unless the spots are overrun by the advancing fire front. Even still, in a high wind event the fire front will often skip over small areas of vegetation without burning, allowing individual spots to be documented.

The area between the east phase, and the specific origin area 147 feet east was densely covered with cured grasses, leaf litter, small twigs, and brush. Not a single spot fire, not a single area of charring was found between the subject cottonwood and the specific origin 147 feet down wind during my November 22 scene investigation.

The Clark VFD fire report¹³ also states the first spot fire was 139 feet from the west side of the subject cottonwood with no spots in the dried grasses in between these two areas. Clark VFD photo LL4/ Clark Fire 000011 shows unburned cured vegetation between the cottonwood and

¹² Carlson Attachment K, Pam Nelson Video.

¹³ Carlson Exhibit 14, attachment M, Clark Fire

Golden File: 210867

File Name: Asplundh Tree Service

the specific origin. This is not consistent with the video of the ember cast taken by Pam Nelson the night of the fire. The wind conditions during the video are the same/similar as during fire ignition.

In high wind events tree branches will move side to side, and up and down, often in a violent whipping motion. At the same time powerlines will begin to "Gallop" moving up and down due to the weight of the conductors. While wind direction and speed/ force would certainly play a factor in the movement of ember cast, so too would the whipping up and down of the branches sending some embers in a downward direction.

In addition, with tree line contact resulting from high winds, there are generally more than two or three contacts between the tree and the phase, generating multiple opportunities for hot embers to contact the ground. Investigators only accounted for 1-4 spot fires 140 feet east of the subject tree. Further with the high winds, a spot fire in the receptive cured fuels between the tree and origin would have transitioned into an advancing fire front. None did.



Clark VFD IMG 1220 - Terrain and unburned fuels between subject tree and origin. Note the uphill slope just below the origin.

Item 5 from above:

Arc Tracking¹⁴. Evidence items E-1, E-9, and E-11 all have varying degrees of small, pin hole, marks that ran longitudinally on the outer skin of the bark. The marks were several mm apart and formed a pattern similar to arc tracking.

¹⁴ NFPA 921, 2021 Edition, 9.9.4.5.1 Arc Tracking

Golden File: 210867

File Name: Asplundh Tree Service



Schmitt IMG P6120014, June 12 lab exam Micron Imaging

Upon seeing these patterns, I also initially thought these marks may have been the result of electrical arc tracking on the branches. Arc tracking, also referred to as arcing through char, occurs when an electrical current follows a path of least resistance, usually involving moisture or a conductive contaminate on the surface of the subject item such as salts, conductive dusts, and/or liquids. Small leakage currents creating a path of carbonization, carbon being conductive allows the current to continue flowing along the carbonized path leaving a narrow trail or path of charred surface.

The marks on items E-1, E-9, and E-11 could not have been caused by arc tracking as any possible contact with the east phase would have been intermittent, and not sustained. Further, any possible tree line contact would have been random, and not at a specific contact point on the branch.

Evidence items E-1, E-9, and E-11 were examined on June 12, 2023, at Micron Imaging in Englewood, Colorado. In attendance was Forensics Arborist Mike Neal. Mr. Neal saw the marks and stated they were not due to electrical current but were biological. He said he had seen these patterns many times prior in his career. He said they usually appear on wood that was dead or dying.

During the lab exam, forensic Tree Pathologist Ana Fulladolsa Palma, Ph.D. working for the plaintiffs, sliced a thin section of bark from under the pattern. No current path or arc tracking was found.

Golden File: 210867

File Name: Asplundh Tree Service



Schmitt IMG P6120044. June 12, 2023, Lab Exam. Micron Imaging

The marks suspected of being arc tracking were not from electrical current contacting the branches but were biological. Paul Way, EE, P.E. was present for this evidence examination.

The work conducted for this assignment included:

1. Online research for information regarding the Clark Wildfire.
2. Review weather data for the day prior, and the day of the fire.
3. Telephone interview with Clark Volunteer Fire Department Chief Nate Hoffert.
4. Interview with facility caretaker Pam Nelson, (witness to the fire).
5. Conduct a wildfire origin and cause investigation following the recommended processes as outlined in NWCG ¹⁵(National Wildfire Coordinating Group) PMS 412, Guide to Wildfire Origin and Cause Determination.
6. Attend or have representation at evidence collection and forensics lab examinations.
7. Confer with the respective experts including Electrical, Forensic Arborists, and Forensic Tree Pathologist.
8. Review of expert reports and related exhibits for the following:
 - a. Fire Investigator Alan Carlson report and exhibits
 - b. Electrical Engineer Paul Way report
 - c. Plant Pathologist Ana Fulladolsa Palma report
 - d. Meteorologist Paul Werth report
9. Golden Forensics attends all site and evidence exams.
 - a. November 21-22, 2021, Fire Investigation
 - b. June 16, 2022, Evidence collection at 197 Louis L 'Amour Lane

¹⁵ NWCG PMS 412, April 2016, Chapter 2 Pg 101-132.

Golden File: 210867

File Name: Asplundh Tree Service

- c. April 11, 2023, Lab Exam Micron Imaging
- d. June 12, 2023, Lab Exam Micron Imaging
- e. July 27, 2023, Lab Exam Micron Imaging.

Scene Examination

The site was processed using a systematic methodology as recommended in NWCG PMS 412, and NFPA 921¹⁶. When conducting a wildfire origin and cause investigation, the general methodology is to “Establish fire behavior context, noting the size, direction of spread, rate of spread, flame height and length, fuel type, fuel volume, fuel arrangement, slope and aspect at the heel of the fire”¹⁷. The Investigator should also recognize and document fire pattern indicators (FPI’s) which will help determine the general area of origin by showing fire movement patterns, or vectors, on the various fuel types; clumps of grass, standing vegetation, trees, fence posts, rocks, soda cans, and so on.

There are three basic fire movement patterns: Advancing fire, Lateral or Flanking fire, and Backing fire. Advancing fire is the initial run the fire makes moving out from the general origin. Advancing fire movement is often controlled by the wind, with uphill slope and/or fuels also playing a factor and generally has the cleanest or most intensive burn. Flanking or Lateral vectors are the sides of the fire and are found on the outer edges of the advancing fire patterns. Backing patterns are found at the rear of the fire, opposite the advancing fire, and are generally low intensity fire patterns.

Wildfires often burn in a “V” pattern, expanding outward as the fire moves forward and impacts greater area, the bottom or narrow part of the “V” is where the origin resides. In low wind conditions the “V” will expand quickly and can become quite wide. In high wind conditions the “V” will likely be narrow as the winds push the heat energy from the fire forward, preheating fuels in front of the fire, creating significant ember cast and spot fires in front of the fire, and rapidly increasing the rate of spread. Witness statements, and investigator findings confirm these were the conditions the evening of November 15, 2021.

The Clark Wildfire was a wind driven event, with a very narrow “V”, and little or no backing fire. This was documented by the Clark VFD and is consistent with the reported opinions of the various origin and cause investigators involved with this fire investigation.

¹⁶ National Fire Protection Agency (NFPA) 921, Guide for Fire and Explosion Investigations, 2021 Edition

¹⁷ NWCG PMS 412, Chapter 2, pg 115.

Golden File: 210867

File Name: Asplundh Tree Service



Approximate spread left, (West) to right, (East). Not to scale Flanks-Yellow, Advancing-Red

On November 21-22, 2021, the location of the Clark Wildfire was documented. The scene was photographed, and measurements taken. Fire Pattern Indicators, FPI's, were visually inspected and documented showing the footprint of the Clark Wildfire and confirming the specific origin area.

The process used for documenting indicators is consistent with recommended practices found in NWCG PMS 412 and is the same process I've used for conducting Wildfire Origin and Cause Investigations since 1997. The site was first walked and FPI's visually documented giving an overview of the fire dynamics. Specific FPI's are flagged using lime green landscape flags. Each FPI is specific to what the fire was doing at that point in time. When identifying FPI's to flag, I look for patterns that show fire movement, and will photograph well, not specific fire travel vectors.

Golden File: 210867

File Name: Asplundh Tree Service

Once sufficient FPI's have been flagged to accurately show fire movement, I document the FPI's, showing:

1. The direction of fire travel at that point using a red pointed arrow to show fire travel.
2. Where the pattern is located relative to a defined reference point including a compass vector to the reference point and a distance using a laser range finder.
3. The location of the FPI is GPS'ed.
4. The FPI is photo documented from a minimum of 4 points showing all sides of the fuel and the fire pattern. Photo numbers are recorded with each entry.
5. The data is then recorded in a notebook with the indicator number, vectors, type of fuel, the fire pattern, and the GPS coordinate. One notebook for each fire.



FPI 1



In these photos, the red arrow points toward the direction the fire is traveling, the small orange arrow points toward north to orient the FPI in the photo, and the number placard assigns a

Golden File: 210867

File Name: Asplundh Tree Service

number to each FPI for documentation. The pattern for FPI #1 would be angle of char, with vortex wrap on the back side of the tree indicating a high wind.

As this was a wind driven event, the fire travel was consistent with the wind direction. No backing patterns were found at the origin. Multiple FPI's were flagged, eight indicators were documented showing the origin, and wind driven fire spread.

See FPI attachment 1.

Summary of Review

As outlined in the Executive Summary, experts for the plaintiff's properly attempted to document the first fuel ignited, the heat source, and the action that brought the two together. Tree Line Contact between energized powerlines, and an ignitable fuel, such as trees is the cause for numerous fires each year. It's also known that thousands of incidental/casual Tree Line Contacts occur every year without fire ignitions.

NFPA 4.3.6¹⁸ states: The investigator does not have a valid or reliable conclusion unless the hypothesis can stand the test of careful and serious challenge.

The expert's conclusion that the east energized phase contacted vegetation from the subject tree, creating ember cast and igniting fuels 140 feet east of the subject tree fails in multiple areas.

1. Plaintiff's experts attempted to manually move the east phase to show contact with the subject tree. They were unable to do so by 30".
2. Plaintiff's experts opined E-1 a branch with charring on one end, found 32.7 feet east of the subject tree was part of E-11, and broken branch/stub of the subject tree. Forensic Arborist Mike Neal stated E-1 was not from the branch/stub, and likely not from the same tree. The bark from E-1 did not match the bark from E-11, the broken ends of either branch did not match, by a long way. Photos taken after the fire show numerous other like branches in the same vicinity. There was no evidence E-1 the single branch with charring on the end was involved with the Clark fire and no evidence to show how long the branch may have been there, weeks, months, or longer?
3. Plaintiff's experts state the area of origin, 140 feet east of the subject tree was due to ember cast coming from a tree line contact, but there is no discussion or explanation for why not a single spot fire was noted in the cured grass fuels between the subject tree and the origin over the entire 140 plus feet. They provided a video taken by witness Pam Nelson to show ember cast after the fire was well established but are unable to explain with any reliability why ember cast was not found between the tree and origin.
4. Plaintiff's experts point to a pattern of small dark openings on E-1, E-9, and E-11 as arc tracking and evidence of electrical contact. In a lab exam on June 12, 2023, Plaintiff's

¹⁸ NFPA 921, 2021, pg 21, 4.3.6 Test the Hypothesis.

Golden File: 210867

File Name: Asplundh Tree Service

expert Plant Pathologist Ana Fulladolsa Palma removed a thin layer of bark under several of the black marks and no arc tracks or indications of electrical current were found.

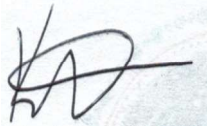
During the almost three-year course of this investigation, experts for the plaintiff's failed to prove with any physical evidence that tree line contact occurred the evening of November 15, 2021, involving a single phase 7.2 kilovolt electrical service line owned by Beartooth Electric Cooperative in the vicinity of 197 Louis L 'Amour Lane, Clark Wyoming, and a cottonwood tree, causing the ignition of the Clark Wildfire.

Conclusions

The cause of the fire was undetermined.

Limitations These services were performed in the manner defined in the Assignment section of this report. The opinions contained within this report were based on the information collected and reviewed to date, and are based on the expert's education, experience, and training. All findings are based upon a reasonable degree of scientific certainty. The data, findings, and opinions are subject to changes that may be warranted by subsequently acquired information. Any re-use of this report or the conclusions presented without the express permission of Golden Forensics is prohibited.

Kirk Schmitt, IAAI-CFIFire Investigator/Wildfire Specialist



(o) 720.879.7102

(c) 719.205.6044

kschmitt@goldenforensics.com

Golden File: 210867
File Name: Asplundh Tree Service

Attachment 1

Fire Pattern Indicator Log

Indicator #	Pattern	Fuel	Fire travel vector	Reference point Vector	RP Distance	Photo #'s
1.	AC Freeze wrap	Tree	E-80	RP NW 314	338'	89-93
2.	AC	Yucca	E-78	RP NW 312	314.4"	94-99
3.	Cupping	Staubs	N-16	RP NW 318	78.5'	100-106
4.	Cluster Angle Stain Pro,	Rock/root	SE 124	RP NW 324	319.6'	107-118
5.	Flank stain char	Shrub	S-196	RP NW 332	265.3'	124-130
6.	AC Cupping	Sage shrub	E-96	RP NW 332	323'	131-137
7.	Cluster AC Pro, Cup-	Root NW 306		RP NW 308	526.8'	138152
8.	AC Stain- Clump, Rock		NW 314	RP W 296	616.3'	153-168

Qualifications

Employment History

Golden Forensics, LLC., Fire Investigator/Wildfire Specialist, 2019 - Present

Phoenix/Unified/EFI Investigations & Sciences, Inc., Senior Fire Investigator/Wildland Fire Specialist, 2012-2019

IRIS Fire Investigations, Inc., Fire Investigator/Wildfire Specialist, 2011- 2012

Phoenix Investigations, Inc., Senior Investigator/Wildland Fire Specialist, 2004 – 2011

Colorado Springs Fire Department, POST certified Fire/ Arson Investigator, 1997-2006

Colorado Springs Fire Department, Firefighter/HazMat Tech/Wildfire Team, 1984-1997

Specialized Education

Essentials of NFPA 1033, Unified Investigations & Sciences, 2017

8 Hour HAZWOPER Refresher Training, OSHA Regulation 29 CFR 1910.120(e) & (p), 2017

Asbestos Awareness Training, 29 CFR 1910.1001(j)(7), 29 CFR 1915.1001(k)(9), 29 CFR 1926.1101(k)(9), 40 CFR Part 763 Subpart G, State OSHA/EPA Regulations, 2017

Thermometry, Heat, and Heat Transfer, CFITrainer.net/IAAI, 2017

Explosion Dynamics, CFITrainer.net/IAAI, 2017

Documenting the Event, CFITrainer.net/IAAI, 2016

Golden File: 210867
File Name: Asplundh Tree Service

Introduction to Evidence, CFITrainer.net/IAAI, 2016

DNA, CFITrainer.net/IAAI, 2016

Practical Application of the Relationship Between NFPA 1033 and NFPA 921,
CFITrainer.net/IAAI, 2016

Tenth Annual Wildland Fire Litigation Conference, Monterey, California, 2016

Globally Harmonized System of Classification and Labeling of Chemicals, OSHA 29 CFR
1910.1200, Unified Investigations and Sciences Inc., 2015

Wildland Serial Arson Investigation Conference, Integrated EOD Concepts, 2015

International Association of Arson Investigators ITC, General Session Exam, 2014

OSHA Hazardous Materials Refresher with Asbestos Awareness, ABAG Training Center, 2014

NWCG F1 310, Wildland Fire Investigation Case Development, New Castle, CO, 2014

Wildland Litigation Conference, Monterey, CA, 2014

International Association of Arson Investigators ITC, Las Vegas NV, 2014

Globally Harmonized System of Classification and Labeling of Chemicals, OSHA 29 CFR
1910.1200, Unified Investigations and Sciences Inc., 2014

Wildland Litigation Conference, Monterey, CA, 2013

OSHA Hazardous Materials Refresher with Asbestos Awareness, 2013

Writing the Initial Origin and Cause Report, CFITrainer.net/IAAI, 2013

Charleston Sofa Upper Store Fire, CFITrainer.net/IAAI, 2012

Using Resources to Validate your Hypothesis, CFITrainer.net/IAAI, 2012

Commercial Kitchen Hood Fire Suppression Systems: Advanced Engineering Investigations
Corp., Denver, CO, 2012

Flashover & Fire Patterns: Jamie Novak, Denver, CO, 2012

Wildland Fire Investigations: Paul Steensland, Denver, CO, 2012

Arc Mapping Basics, CFITrainer.net/IAAI, 2010

Insurance and Fire Investigations, CFITrainer.net/IAAI, 2010

Ventilation Focused Approach to the Impact of Building Structures and Systems on Fires,
CFITrainer.net/IAAI, 2010

Golden File: 210867

File Name: Asplundh Tree Service

Wildland Fire Investigation, CFITrainer.net/IAAI, 2010

Critical Thinking Solves Cases, CFITreainer.net/IAAI,2009

FEMA IS-00200 ICS for Single Resource and Incident Action Incidents June 2006

FEMA IS 00100 Intro to the Incident Command System, June 2006

BATF Department of Justice: Cause and Origin Courtroom Techniques, 2005

NWCG FI-210 Wildfire Origin and Cause Determination, 2004

NWCG S-290 Intermediate Wildland Fire Behavior, 2004

BATF Department of the Treasury: Complex Arson Investigation Techniques, 2003

FBI Academy, Quantico VA: Arson Crime Scene Investigation, Sept 10-15, 2001

National Fire Academy: Fire/Arson Investigation, 2000

State of Colorado Peace Officers Standards and Training Board- POST: 1998

NWCG P-101, Introduction to Wildfire Prevention, 1997

Professional Affiliations

International Association of Arson Investigators

IAAI Wildland Arson Committee Member

International Association of Wildland Fire

Past Secretary Colorado Chapter of the International Association of Arson Investigators

Certifications/Registrations

Certified Fire Investigator, (IAAI-CFI), Certificate #41-038

International Association of Arson Investigators, Member #21398

National Board on Fire Service Professional Qualifications, Fire Investigator, NFPA 1033-2009, Certification #287547

Testimony and Depositions

Trial- District Court State of Nevada, County of Washoe Case No.: CV17-00225 Wildfire

Trial,- District Court, El Paso County, Rule 35C Hearing, People of the State of Colorado vs. Timothy Nicholls. Case # 05-CR-003776, November 19, 2013. Murder/Arson

Trial - U.S. District Court of West Virginia, US vs Shaver January 2012, 2:11-cr-00019-JPB-JCK-1

Golden File: 210867

File Name: Asplundh Tree Service

Trial - District Court, Garfield County, People of the State of Colorado vs. Larry Del Gerbaz.
Case # 09008-CR-00353, August 17, 2009. Wildfire Arson

Trial – Federal Court, Denver, CO, State Farm vs. United States Forest Service. September 9,
2008. Civil

Trial – District Court, El Paso County, People of the State of Colorado vs. Debra Nicholls. Case #
07-CR-5429, November 24, 2008. Murder/Arson

Trial – District Court, El Paso County, People of the State of Colorado vs. Timothy Nicholls.
Case # 05-CR-377, April 3, 2007. Murder/Arson

Trial – District Court El Paso County, People of the State vs. Tracy Rodriguez. Case# 06-CR-
01404, October 03, 2006. Assault /Arson

Trial-District Court El Paso County, People of the State vs. Shannon Dean Merrow. Case# 03-
CR-0339, July 27, 2005. Murder

Trial- District Court El Paso County, People of the State vs. Justin Hardy. Case# 05-CR-00122,
July 27, 2005. Manufacture of Controlled Substance

Trial- District Court El Paso County, People of the State vs. Tyler LePage. Case# 03-CR-03617,
December 01, 2004. Murder/Arson

Trial-District Court El Paso County, People of the State vs. Kristy Samora. Case# 03-CR-02916,
April 04, 2004. Manufacture of Controlled Substance

Trial- District Court El Paso County, People of the State vs. James Logan. Case# 02-CR-42921,
July 07, 2003. Arson/Burglary

Trial- District Court El Paso County, People of the State vs. Juvenile. Case# 02JD0108, August
08, 2002. Arson

Trial- District Court El Paso County, People of the State vs. Juvenile. Case# 01JD01412,
December 10, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Joshua Hybl, Case# 01-CR-04112,
November 11, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Jeffery Rubeck, Case# 01-CR-02191,
August 23, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Robert Taylor, Case# 00-CR-02022,
May 01, 2001. Arson

Golden File: 210867

File Name: Asplundh Tree Service

Compensation

Structure Fire Investigation- \$210.00 /hr

Wildfire Investigations- 265.00/ hr

Travel expenses- At cost

Mileage- IRS rate

Haz Mat site exam- Hourly + \$25.00/ hr

Litigation Services

Deposition and Trial testimony billed at the above hourly rate. All fees and expenses for depositions will be paid before the services are performed. This includes a minimum of 4 hours, travel expenses, reproduction of photographs, etc. All payments due 2 weeks prior to scheduled deposition/trial.

Attachment 1

Fire Pattern Indicator Log

Indicator #	Pattern	Fuel	Fire travel vector	Reference point Vector	RP Distance	Photo #'s
9.	AC Freeze wrap	Tree	E-80	RP NW 314	338'	89-93
10.	AC	Yucca	E-78	RP NW 312	314.4"	94-99
11.	Cupping	Staubs	N-16	RP NW 318	78.5'	100-106
12.	Cluster Angle Stain Pro,	Rock/root	SE 124	RP NW 324	319.6'	107-118
13.	Flank stain char	Shrub	S-196	RP NW 332	265.3'	124-130
14.	AC Cupping	Sage shrub	E-96	RP NW 332	323'	131-137
15.	Cluster AC Pro, Cup-	Root NW 306		RP NW 308	526.8'	138152
16.	AC Stain-	Clump, Rock	NW 314	RP W 296	616.3'	153-168

Qualifications

Employment History

Golden Forensics, LLC., Fire Investigator/Wildfire Specialist, 2019 - Present

Phoenix/Unified/EFI Investigations & Sciences, Inc., Senior Fire Investigator/Wildland Fire Specialist, 2012-2019

IRIS Fire Investigations, Inc., Fire Investigator/Wildfire Specialist, 2011- 2012

Golden File: 210867

File Name: Asplundh Tree Service

Phoenix Investigations, Inc., Senior Investigator/Wildland Fire Specialist, 2004 – 2011

Colorado Springs Fire Department, POST certified Fire/ Arson Investigator, 1997-2006

Colorado Springs Fire Department, Firefighter/HazMat Tech/Wildfire Team, 1984-1997

Specialized Education

Essentials of NFPA 1033, Unified Investigations & Sciences, 2017

8 Hour HAZWOPER Refresher Training, OSHA Regulation 29 CFR 1910.120(e) & (p), 2017

Asbestos Awareness Training, 29 CFR 1910.1001(j)(7), 29 CFR 1915.1001(k)(9), 29 CFR 1926.1101(k)(9), 40 CFR Part 763 Subpart G, State OSHA/EPA Regulations, 2017

Thermometry, Heat, and Heat Transfer, CFITrainer.net/IAAI, 2017

Explosion Dynamics, CFITrainer.net/IAAI, 2017

Documenting the Event, CFITrainer.net/IAAI, 2016

Introduction to Evidence, CFITrainer.net/IAAI, 2016

DNA, CFITrainer.net/IAAI, 2016

Practical Application of the Relationship Between NFPA 1033 and NFPA 921,
CFITrainer.net/IAAI, 2016

Tenth Annual Wildland Fire Litigation Conference, Monterey, California, 2016

Globally Harmonized System of Classification and Labeling of Chemicals, OSHA 29 CFR 1910.1200, Unified Investigations and Sciences Inc., 2015

Wildland Serial Arson Investigation Conference, Integrated EOD Concepts, 2015

International Association of Arson Investigators ITC, General Session Exam, 2014

OSHA Hazardous Materials Refresher with Asbestos Awareness, ABAG Training Center, 2014

NWCG F1 310, Wildland Fire Investigation Case Development, New Castle, CO, 2014

Wildland Litigation Conference, Monterey, CA, 2014

International Association of Arson Investigators ITC, Las Vegas NV, 2014

Globally Harmonized System of Classification and Labeling of Chemicals, OSHA 29 CFR 1910.1200, Unified Investigations and Sciences Inc., 2014

Wildland Litigation Conference, Monterey, CA, 2013

Golden File: 210867

File Name: Asplundh Tree Service

OSHA Hazardous Materials Refresher with Asbestos Awareness, 2013

Writing the Initial Origin and Cause Report, CFITrainer.net/IAAI, 2013

Charleston Sofa Upper Store Fire, CFITrainer.net/IAAI, 2012

Using Resources to Validate your Hypothesis, CFITrainer.net/IAAI, 2012

Commercial Kitchen Hood Fire Suppression Systems: Advanced Engineering Investigations Corp., Denver, CO, 2012

Flashover & Fire Patterns: Jamie Novak, Denver, CO, 2012

Wildland Fire Investigations: Paul Steensland, Denver, CO, 2012

Arc Mapping Basics, CFITrainer.net/IAAI, 2010

Insurance and Fire Investigations, CFITrainer.net/IAAI, 2010

Ventilation Focused Approach to the Impact of Building Structures and Systems on Fires, CFITrainer.net/IAAI, 2010

Wildland Fire Investigation, CFITrainer.net/IAAI, 2010

Critical Thinking Solves Cases, CFITreainer.net/IAAI,2009

FEMA IS-00200 ICS for Single Resource and Incident Action Incidents June 2006

FEMA IS 00100 Intro to the Incident Command System, June 2006

BATF Department of Justice: Cause and Origin Courtroom Techniques, 2005

NWCG FI-210 Wildfire Origin and Cause Determination, 2004

NWCG S-290 Intermediate Wildland Fire Behavior, 2004

BATF Department of the Treasury: Complex Arson Investigation Techniques, 2003

FBI Academy, Quantico VA: Arson Crime Scene Investigation, Sept 10-15, 2001

National Fire Academy: Fire/Arson Investigation, 2000

State of Colorado Peace Officers Standards and Training Board- POST: 1998

NWCG P-101, Introduction to Wildfire Prevention, 1997

Professional Affiliations

International Association of Arson Investigators

IAAI Wildland Arson Committee Member

International Association of Wildland Fire

Golden File: 210867

File Name: Asplundh Tree Service

Past Secretary Colorado Chapter of the International Association of Arson Investigators

Certifications/Registrations

Certified Fire Investigator, (IAAI-CFI), Certificate #41-038

International Association of Arson Investigators, Member #21398

National Board on Fire Service Professional Qualifications, Fire Investigator, NFPA 1033-2009, Certification #287547

Testimony and Depositions

Trial- District Court State of Nevada, County of Washoe Case No.: CV17-00225 Wildfire

Trial,- District Court, El Paso County, Rule 35C Hearing, People of the State of Colorado vs. Timothy Nicholls. Case # 05-CR-003776, November 19, 2013. Murder/Arson

Trial - U.S. District Court of West Virginia, US vs Shaver January 2012, 2:11-cr-00019-JPB-JCK-1

Trial - District Court, Garfield County, People of the State of Colorado vs. Larry Del Gerbaz. Case # 09008-CR-00353, August 17, 2009. Wildfire Arson

Trial – Federal Court, Denver, CO, State Farm vs. United States Forest Service. September 9, 2008. Civil

Trial – District Court, El Paso County, People of the State of Colorado vs. Debra Nicholls. Case # 07-CR-5429, November 24, 2008. Murder/Arson

Trial – District Court, El Paso County, People of the State of Colorado vs. Timothy Nicholls. Case # 05-CR-377, April 3, 2007. Murder/Arson

Trial – District Court El Paso County, People of the State vs. Tracy Rodriguez. Case# 06-CR-01404, October 03, 2006. Assault /Arson

Trial-District Court El Paso County, People of the State vs. Shannon Dean Merrow. Case# 03-CR-0339, July 27, 2005. Murder

Trial- District Court El Paso County, People of the State vs. Justin Hardy. Case# 05-CR-00122, July 27, 2005. Manufacture of Controlled Substance

Trial- District Court El Paso County, People of the State vs. Tyler LePage. Case# 03-CR-03617, December 01, 2004. Murder/Arson

Trial-District Court El Paso County, People of the State vs. Kristy Samora. Case# 03-CR-02916, April 04, 2004. Manufacture of Controlled Substance

Trial- District Court El Paso County, People of the State vs. James Logan. Case# 02-CR-42921, July 07, 2003. Arson/Burglary

Golden File: 210867

File Name: Asplundh Tree Service

Trial- District Court El Paso County, People of the State vs. Juvenile. Case# 02JD0108, August 08, 2002. Arson

Trial- District Court El Paso County, People of the State vs. Juvenile. Case# 01JD01412, December 10, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Joshua Hybl, Case# 01-CR-04112, November 11, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Jeffery Rubeck, Case# 01-CR-02191, August 23, 2001. Arson

Trial- District Court El Paso County, People of the State vs. Robert Taylor, Case# 00-CR-02022, May 01, 2001. Arson

Compensation

Structure Fire Investigation- \$210.00 /hr

Wildfire Investigations- 265.00/ hr

Travel expenses- At cost

Mileage- IRS rate

Haz Mat site exam- Hourly + \$25.00/ hr

Litigation Services

Deposition and Trial testimony billed at the above hourly rate. All fees and expenses for depositions will be paid before the services are performed. This includes a minimum of 4 hours, travel expenses, reproduction of photographs, etc. All payments due 2 weeks prior to scheduled deposition/trial.